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Biological Weapons FAQ v. 0.51

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Frequently Asked Questions about Biological Weapons and Defense

The following questions are covered in this FAQ:

1. What are "biological weapons"?
2. Are biological weapons dangerous?
3. Have biological weapons ever been used in warfare or terrorism?
4. How hard is it to make, store, transport and deliver biological weapons?
5. What could happen if a biological weapon were used in a city?
6. What, and how much biological agents have been produced?
7. How can biological weapons be defended against?
8. What should be done if a suspected biological agent is released?
9. Where can I get more information about biological weapons and defense?
    - Web Links
    - Audio Tapes
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    - CDROM
    - Video Tapes
10. Frequently Asked Questions About this FAQ

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1. *What are "biological weapons"?*

   Biological weapons are any infectious agent such as a bacteria or virus when used intentionally to inflict harm upon others. This definition is often expanded to include biologically-derived toxins and poisons.

   According to an unclassified report of the Canadian Security Intelligence Service, Chemical and Biological Terrorism: The Threat According to the Open Literature (en français, La Menace de Terrorisme Biologique ou Chimique Selon Les Sources Publiées):

   > Biological warfare agents include both living microorganisms (bacteria, protozoa, rickettsia, viruses, and fungi), and toxins (chemicals) produced by microorganisms, plants, or animals. (Some authors classify toxins as chemical rather than biological agents, but most do not, and they were included within the 1972 Biological Weapons Convention-as reflected in its formal title, the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction). Writers on the subject have produced a long list of BW agents that terrorists could potentially use. Among those mentioned have been: anthrax, cryptococcosis, escherichia coli, haemophilus influenzae, brucellosis (undulant fever), coccidioidomycosis (San Joaquin Valley or desert fever), psittacosis (parrot fever), yersina pestis (the Black Death of the 14th Century), tularemia (rabbit fever), malaria, cholera, typhoid, bubonic plague, cobra venom, shellfish toxin, botulinal toxin, saxitoxin, ricin, smallpox, shigella flexneri, s. dysenteriae (Shiga bacillus), salmonella, staphylococcus enterotoxin B, hemorrhagic fever, Venezuelan equine encephalitis, histoplasma capsulatum, pneumonic plague, Rocky Mountain spotted fever, dengue fever, Rift Valley fever, diphtheria, melioidosis, glanders, tuberculosis, infectious hepatitis, encephalitides, blastomycosis, nocardiosis, yellow fever, typhus, tricothecene mycotoxin, aflatoxin, and Q fever. Some of these agents are highly lethal; others would serve mainly in an incapacitating role. Some authors have also speculated about the possible terrorist use of new, genetically-engineered agents designed to defeat conventional methods of treatment or to attack specific ethnic groups, for example.

2. *Are biological weapons dangerous?*

   Yes.

   The Honorable John D. Holcum, in his Remarks to the Fourth Review Conference of the Biological Weapons Convention, Geneva Switzerland said:

   > Biological weapons are immensely destructive. In the right environment they can multiply, and so self-perpetuate. And they can naturally mutate, frustrating protective measures. Chemical weapons, for all their horrors, become less lethal as they are dispersed and diluted. But even the tiniest quantities of disease organisms can be lethal. For example, botulinum toxin has been described as 3 million times more potent than the chemical nerve agent sarin.
   >
   > And these are truly loathsome instruments of war and terror. Anthrax, for instance, takes three excruciating days to destroy the membranes of the lungs and intestines.
   >
   > Botulinum toxin annihilates by slow asphyxiation, as the cells of the victim's breathing muscles die from within.
   >
   > Small wonder that the international community has placed such organisms out of bounds, even in combat. That was done in the 1972 Convention not only because these are weapons of mass destruction, but because they are infinitely cruel -- intrinsically weapons of terror.

3. *Have biological weapons ever been used in warfare or terrorism?*

   Yes.

   - *6th Century BC* -- Assyrians poisoned enemy wells with rye ergot. (source: Biological Warfare (BW))

   - *6th Century BC* -- Solon of Athens used the purgative herb hellebore (skunk cabbage) to poison the water supply during the siege of Krissa. (source: Biological Warfare (BW))

   - In *1346 AD*, plague broke out in the Tartar army during its siege of Kaffa (at present day Feodosiys in Crimea). The attackers hurled the corpses of those who died over the city walls; the plague epidemic that followed forced the defenders to surrender, and some infected people who left Kaffa may have started the Black Death pandemic which spread throughout Europe. (source: Biological Warfare (BW))

   - *1797* -- Napoleon attempted to infect the inhabitants of the besieged city of Mantua with swamp fever during his Italian campaign. (source: Early History of Chemical, Smoke, Flame, and Biological Weapons.)

   - *1915* -- ...the case, dating back to 1915, of German-American physician Dr. Anton Dilger, who

     > ...established a small biological agent production facility at his northwest Washington, DC home. Using cultures of Bacillus Anthracis (Anthrax) and Pseudomonas Mallei (Glanders) supplied by the Imperial German government, Dilger produced an estimated liter or more of

liquid agent. Reportedly, the agent and a simple inoculation device were given to a group of dock workers in Baltimore who used them to infect a reported 3000 head of horses, mules and cattle destined for the Allied forces in Europe. Allegedly, several hundred military personnel were also affected. (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *1931* -- in July 1994 Prince Mikasa of Japan revealed that Japanese military officials had attempted to poison members of the League of Nations' Lytton Commission assigned to investigate Japan's seizure of Manchuria in 1931, by lacing fruit with cholera germs, but that "the investigators did not develop the disease" (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *1972* -- the arrest in 1972 in Chicago of members of a US right-wing group known as the "Order of the Rising Sun," "dedicated to creating a new master race," who possessed 30 to 40 kilograms of typhoid bacteria cultures for use against water supplies in Chicago, St. Louis, and other Midwestern cities. According to one source, the two instigators, charged with conspiracy to commit murder, were college students, one of whom, a 19-year-old, "had apparently developed the culture in a school laboratory, where a quantity was found". Ponte identifies the facility in question as a Chicago City College lab. According to him, the two arrested members of this "neo-Nazi" organization, one of whom was a "local hospital worker," had "in their possession detailed plans for dumping the deadly germs into the water supplies". Berkowitz et al. report that the Chicago City College student, one Steven Pera, "had worked as a volunteer at a Chicago hospital medical center, but was ordered off the premises when it was learned that he had grown bacterial cultures there and had attempted to obtain chemicals without the proper authority". After recounting this incident, Mengel noted that "the organism selected would have been readily destroyed by normal chlorination". Jenkins and Rubin, agreeing with this judgment, added that "The two had recruited six or seven members who were to be inoculated against the disease, but two of the recruits panicked and tipped off the police"). (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *1982* -- the reported arrest by Los Angeles police and FBI agents of a man "who was preparing to poison the city's water system with a biological poison" . (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *1983* -- the arrest by the FBI in the Northeastern US in 1983 of two brothers who had succeeded in manufacturing an ounce of nearly pure ricin, stored in a 35-mm film canister (Douglass and Livingstone 1987: 31); (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *1984* -- in September 1984 the Rajneesh cult outside of Antelope, Oregon was said to have contaminated salad bars in local restaurants in The Dalles, Oregon, with Salmonella typhi (typhoid), resulting in the poisoning of 750 people, in order to "influence the outcome of a local election". (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *c. 1984* -- the discovery in Paris, variously dated to 1980, the "mid-'80s", or 14 October 1984, of a Red Army Faction "safe house" that included a "primitive laboratory" (according to one source, a bathtub containing quantities of botulinal toxin). Douglass and Livingstone provide the most detailed account of this incident: "The sixth-floor apartment contained typed sheets on bacterial pathology. Marginal notes were identified by graphologists as being the handwriting of Silke Maier-Witt, a medical assistant by profession, terrorist by

night. Other items included medical publications dealing with the struggle against bacterial infection....In the bathroom, the French authorities found a bathtub filled with flasks containing cultures of Clostridium botulinum". This may be the same incident as that described by the US House Armed Services Committee as having occurred in 1989 (!), involving the discovery of a culture of clostridinium botulinum in a "home laboratory" in Paris of a cell of the German "Bader Mainhof gang". (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

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4. *How hard is it to make, store, transport and deliver biological weapons?*
5. *What could happen if a biological weapon were used in a city?*

- The specter of annihilation by killer pathogens or toxins has replaced the Cold War nightmare of extermination by massive nuclear attack. Defense Secretary William S. Cohen held up a five-pound bag of sugar on national television last month to dramatize how, with an equivalent amount of anthrax, Iraq could eliminate at least half the population of Washington. Recent defense studies have warned that the spread of information about how to produce and deliver poisonous agents, coupled with efforts by hostile states and terrorist groups to find less conventional means to challenge the United States, has raised the risk of biological or chemical attack. (source: U.S. Gearing Up Against Germ War Threat Special Military Units Focus on Response to Unconventional Attacks by Bradley Graham, Washington Post Staff Writer, Sunday, December 14, 1997; Page A01)

- A US Army general in 1960 is reported to have estimated that just two aircraft, each carrying 10,000 pounds of biological agents over the US, could kill or incapacitate some 60 million Americans (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- Some authors maintain that anthrax is an even more deadly agent. According to one study, in principle, if its spores were distributed appropriately, a single gram would be sufficient to kill more than one-third of the population of the US. Of course, the authors were quick to point out that an attack of such magnitude would not be feasible. However, more realistic, smaller-scale scenarios still posit large numbers of casualties. For example, the US Law Enforcement Assistance Administration reported in March 1977 that a single ounce of anthrax introduced into the air-conditioning system of a domed stadium could infect 70-80,000 spectators within an hour). And a 1972 study by the Advanced Concepts Research Corporation of Santa Barbara, California, postulated that an aerosol attack with anthrax spores on the New York City area would result in more than 600,000 deaths. (source: Chemical and Biological Terrorism: The Threat According to the Open Literature)

- *This is a CNN special report. This just in. The Center for Disease Control has just declared that an epidemic is widespread in Miami, Florida. Doctors have not yet diagnosed the specific cause of the rampant disease, but the illness initially resembles a chest cold that progresses into pneumonia-like symptoms. It then progresses rapidly into fever and shortness of breath. What is especially peculiar about this epidemic is that all the patients who have sought medical attention attended the Orange Bowl football game on New Year's Day. Authorities have asked that anyone who went to that game seek medical care if cold-like symptoms appear. Stay tuned to CNN for further developments on this story. Elsewhere in the news ...*

  This is a notional, yet frightening illustration of what the first signs of a biological warfare (BW) attack might sound like. This scenario is a plausible example of an attack a terrorist or

deranged person might conduct using off-the-shelf technology and readily available biological warfare agents. The 'concept of operations' in this attack consisted of using several insect bombs (the kind where you push the button, it starts spraying, and you leave the house for two hours) and modifying them by filling the canister with anthrax bacteria bought through a mail order specimen company in the United States. If that doesn't sound credible, please note that Saddam Hussein bought his original anthrax culture from a mail order house in the United States and had it shipped overnight mail! This is just a sample of many plausible scenarios that could employ biological warfare agents in a terrorist or combat operation. (source: The Biological Weapon: A Poor Nation's Weapon of Mass Destruction)

Table 2

Estimates of Casualties Produced by Hypothetical Biological Attack*

Agent	Downwind Reach (Km)	Dead	Incapacitated
Rift Valley fever	1	400	35,000
Tick-borne encephalitis	1	9,500	35,000
Typhus	5	19,000	85,000
Brucellosis	10	500	125,000
Q fever	>20	150	125,000
Tularemia	>20	30,000	125,000
Anthrax	>20	95,000	125,000

*Release of 50 Kg of agent by aircraft along a 2 km line upwind of a population center of 500,000. Health Aspects of Chemical and Biological Weapons, WHO, 1970

(Source: Biological Warfare: A Historical Perspective)

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6. *What, and how much biological agents have been produced?*

It is difficult to discover comprehensive data on biological weapons production. However, it is clear that substantial amounts of biologically active weapons have been produced by various nations. For instance, Jane's Sentinel, an internationally recognized source of security information, lists the following confirmed biological weapons produced by the nation of Iraq:

- UNSCOM has discovered that Iraq produced 19,000 litres of botulinum, 8,400 litres of anthrax, 2,000 litres of aflatoxin and clostridium.

  In July 1995, Iraq has admitted that it had looked to build a biological warfare capability. In 1988, it had imported 39 tonnes of growth for agents eg. anthrax and botulinum. UNSCOM has destroyed much of the growth media, but it thinks as much as 17 tonnes is still unaccounted for.

  (source: Jane's Sentinel: Security Assessments)

- 02/25/98 - 11:45:11 ET Russia - A defector from the former Soviet biological weapons

program said in an interview on 24 February that Moscow's Cold War plans for World War III included preparing "hundreds of tons" of anthrax bacteria and scores of tons of smallpox and plague viruses for deployment on inter-continental ballistic missiles.

The defector, debriefed by the CIA in 1992 after his defection, said that the Russian military was still running an offensive biological weapons program in 1991, and may still do so.

Kanatjan Alibekov, now known as Ken Alibek, to be a highly credible source on the Soviet biological weapons program.

No official response to the interview was available from Moscow or the Russian embassy in Washington.

[source: NY Times - Washington, by Tim Weiner, 2/25/98] ©1998 Jane's Information Group (Note: Items from news/wire services are abstracted from the originals and are not verbatim) (source: Jane's Intelweb)

7. *How can biological weapons be defended against?*

Biological defence may be divided into the following categories: prevention, protection, detection, treatment, and decontamination.

- **Prevention** Prevention may take several forms. In the case of biological warfare, international disarmament and inspection regimes may deter production and dissemination of biological agents. Intelligence assets may indicate potential threats and allow for preventative action to be undertaken. Vaccination programs may provide substantial protection against naturally-occurring agents, and limited or no protection against genetically-engineered variants designed to defeat such vaccines.
- **Protection** Forms of protection against biological warfare agents are limited in capacity. Protective suits, clothing and filters may provide limited protection for short periods of time. However, the persistence of biological agents such as anthrax makes such protections mainly useful for military personnel and first responders. Anthrax can remain active and potentially lethal for at least 40 years. (source: Biological Warfare: A Historical Perspective)
- **Detection** During the Gulf War, US and allied forces suffered from a lack of reliable biological agent detection systems. Subsequently, a number of detection systems have been developed. These include:
  - SMART (Sensitive Membrane Antigen Rapid Test)
  - JBPDS (Joint Biological Point Detection System)
  - BIDS (Biological Integrated Detection System)
  - IBAD (Interim Biological Agent Detector)

  (source: Biological Warfare and Detection Capabilities)
- **Treatment** Treatment options after infection depend on whether or not the infectious agent is identified. If not identified, massive doses of antibiotics may be given in hopes that something may work. If the agent is identified as anthrax, treatment may be penicillin, two million units every two hours administered intervenously. However, if symptoms are already present, death from anthrax will occur in nearly 100% of cases regardless of treatment. (source: Handbook on the Medical Aspects Of NBC Defensive Operations FM 8-9)
- **Decontamination** Unlike chemical weapons, which disperse over time, biological agents

may grow and multiply over time. Anthrax can remain active in the soil for at least 40 years and is highly resistant to eradication. (Source: Biological Warfare: A Historical Perspective)

8. *What should be done if a suspected biological agent is released?*

   - 402. Decontamination of Exposed Personnel.
     - a. Primary Contamination.
     - b. Secondary Contamination.
     - a. General Supportive Measures.
     - b. Isolation Procedures (Barrier Nursing).
     - c. Antibiotic Therapy.
     - d. Antiviral Therapy.
     - e. Antitoxin Therapy.
   - PROTECTION OF HEALTH CARE PERSONNEL
     - 404. Use of Barrier Techniques.
     - 405. Potential Biological Hazards.
   - SECTION V - HANDLING OF CONTAMINATED REMAINS
   - SECTION VI - MASS CASUALTY MANAGEMENT

   (source: Handbook on the Medical Aspects Of NBC Defensive Operations FM 8-9).

9. *Where can I get more information about biological weapons and defense?*
   - Web Links
   - Audio Tapes
   - Books
   - CD
   - CDROM
   - Video Tapes

Web Links

1. Query Altavista on "biological weapons" -- http://www.altavista.com/cgi-bin/query?pg=q&kl=XX&q=%2B%22biological+weapon%22
2. Search Yahoo for information on "biological weapons" -- http://search.yahoo.com/bin/search?p=biological+weapons
3. Amateur Scientist Tries to Grow Anthrax -- http://www.abcnews.com/sections/science/DailyNews/anthrax0311.html
4. Anthrax Fears in Britain -- http://www.abcnews.com/sections/world/DailyNews/britain0324.html
5. Anthrax as a Biological Warfare Agent -- http://www.defenselink.mil/other_info/agent.html
6. Anthrax in a Biowar environment -- http://www.emergency.com/anthrax.htm
7. Anthrax outbreak casts shadow over homes site -- http://www.mad-cow.org/~tom/anthrax.html
8. Anthrax Vaccine is it Safe and Effective -- http://www.gulfwarvets.com/anthrax.htm
9. Biologic Terrorism - Responding to the Threat -- http://www.medscape.com/govmt/CDC/EID/1997/v03.n02/e0302.17.russell/e0302.17.russell.html
10. Biological Integrated Detection System (BIDS) -- http://www.apgea.army.mil/RDA/pdbio/bids2.html
11. Federation of American Scientists Biological and Toxin Weapons Verification Program -- http://www.fas.org/bwc/
12. Biosafety in Microbiological and Biomedical Laboratories -- http://www.cdc.gov/od/ohs/biosfty/bmbl/bmbl-1.htm
13. BIOWAR-L posts -- http://www.sonic.net/~west/digest.htm
14. Bullets, Gas, and the Bomb: The Spread of Conventional and Unconventional Weapons -- http://www.lol.shareworld.com/zmag/articles/ShalomWeapons.html
15. Burrows Report on the DoD Anthrax Vaccination Program -- http://www.defenselink.mil/other_info/burrows.html
16. Cal Poly CBW Page -- http://www.calpoly.edu/~drjones/chemwarf.html
17. CDC Anthrax (Bacillus anthracis) Frequently Asked Questions -- http://www.cdc.gov/ncidod/dbmd/anthrax.htm

18. Chemical and Biological Terrorism: The Threat According to the Open Literature -- http://www.csis-scrs.gc.ca/eng/miscdocs/tabintr_e.html
19. Chemical and Biological Weapons Nonproliferation Project -- http://www.stimson.org/cwc/
20. Chemical, Biological, and Nuclear Terrorism/Warfare: A Bibliography -- http://web.nps.navy.mil/~library/bibs/chemjrnl.htm
21. Defense Logistics Agency Contracts -- http://www.defenselink.mil/news/May1997/c050297_ct215-97.html
22. DoD News Briefing with Mr. Kenneth H. Bacon, ASD (PA) -- http://www.defenselink.mil/news/Mar1998/t03241998_t0324asd.html
23. DoD News Briefing with Mr. Kenneth H. Bacon, ASD (PA) -- http://www.defenselink.mil/news/Apr1998/t04091998_t0409asd.html
24. DoD News Briefing with LTG Ronald R. Blanck, Army Surgeon General -- http://www.defenselink.mil/news/Mar1998/t03031998_t0303asd.html
25. DoD News Briefing: Threat Posed to America by WMD -- http://www.defenselink.mil/news/Mar1998/t03171998_t0317npc.html
26. The Economic Impact of a Bioterrorist Attack: Are Prevention and Postattack Intervention Programs Justifiable? -- http://www.medscape.com/govmt/CDC/EID/1997/v03.n02/e0302.01.kaufman/e0302.01.kaufman.html
27. Book Review: The Eleventh Plague: The Politics of Biological and Chemical Warfare -- http://www.medscape.com/SCP/IIM/1997/v14.n02/m2251.marr/m2251.marr.html
28. Force Protection -- http://www.defenselink.mil/other_info/protection.html
29. G-Docs and X-Files -- http://www.medscape.com/SCP/IIM/1998/v15.n03/m4223.lutw/m4223.lutw.html
30. Gulf Vet Ills Tied to Biological Agents -- http://business.clemson.edu/Socio/GlfWrSyn/file47.htm
31. Handbook on the Medical Aspects of NBC Defensive Operations FM 8-9 -- http://www.nbc-med.org/amedp6/
32. The Harvard Sussex Program On CBW Armament And Arms Limitation -- http://fas-www.harvard.edu/~hsp/
33. Joyce Replies to Sgt Johnson -- http://www.gulfwarvets.com/reply.htm
34. JAMA Journal of the American Medical Association August 6, 1997 Special issue on Biological Weapons -- http://www.ama-assn.org/sci-pubs/journals/archive/jama/vol_278/no_5/toc.htm
35. Letter to the Editor Regarding Newsweek article on the anthrax vaccination program -- http://www.defenselink.mil/other_info/newswkedit.html
36. Medical Force Protection -- http://www.defenselink.mil/news/Dec1997/x12181997_x1215mfp.html
37. Medical NBC Information Server -- http://www.nbc-med.org/
38. Is Military Research Hazardous to Veterans' Health? Lessons Spanning Half a Century 103d Congress, 2d Session - COMMITTEE PRINT - S. Prt. 103-97 -- http://www.gulfwarvets.com/senate.htm
39. NBC RDA Business Area "The Edgewood Enterprise" -- http://www.apgea.army.mil/RDA/
40. Notes from Joyce on Anthrax Vaccine Safety -- http://www.gulfwarvets.com/vacsaf.htm
41. Office of the Project Manager for NBC Defense Systems -- http://www.apgea.army.mil/RDA/pmnbc/index.html
42. PREEMPT Planned Response Exercises and Emergency Medical Preparedness Training -- http://home.eznet.net/~kenberry/
43. ProMED Program for Monitoring emerging diseases -- http://www.fas.org/promed/
44. The ProMED List -- http://www.medscape.com/other/ProMED/public/ProMED.html
45. A Promise To Do Better Is Not Enough -- http://www.gulfwarvets.com/promise.htm
46. The 2nd Annual PREEMPT Conference on Medical Domestic Preparedness Against CBN (Chemical, Biological, & Nuclear) Terrorism -- http://home.eznet.net/~kenberry/materials/1998conference.htm
47. The Specter of Biological Weapons -- http://www.sciam.com/1296issue/1296cole.html
48. Topical Bibliography of Published Works Regarding the Health of Veterans of the Persian Gulf War -- http://www.gulflink.osd.mil/gwv_bib/
49. Welcome to the Joint Bradford - SIPRI CBW Project -- http://www.brad.ac.uk/acad/sbtwc/home.htm

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The following audio cassettes, books, CDs and video tapes may be ordered now in association with Amazon.com. To order, click on the audio cassette you want and *immediately* select "add to my shopping basket" before visiting any other links. You can use the "back" button on your browser to return to the Biological Warfare FAQ to add more selections or go on to complete your order from Amazon.com. Order fulfillment is handled through Amazon.com via their online ordering system.

Audio Tapes

1. *The Andromeda Strain* by Michael Crichton. (fiction)
2. *Higher Form of Killing* by Intruder.
3. *White Plague* by Frank Herbert. (fiction)

Books

The following books were added to the list November 06, 2001.

1. *21st Century Bioterrorism and Germ Weapons - U.S. Army Field Manual for the Treatment of Biological Warfare Agent Casualties (Anthrax, Smallpox, Plague, Viral Fevers, Toxins, Delivery Methods, Detection, Symptoms, Treatment, Equipment)*
2. *America's Achilles' Heel (BCSIA Studies in International Security)* by Richard A. Falkenrath, Robert D. Newman, Bradley A. Thayer
3. *America's Struggle With Chemical-Biological Warfare* by Albert J. Mauroni
4. *Anthrax: The Investigation of a Deadly Outbreak* by Jeanne Guillemin
5. *Assault Police* by Octavio Diez
6. *Biohazard: The Chilling True Story of the Largest Covert Biological Weapons Program in the World--Told from Inside by the Man Who Ran It* by Ken Alibek, Stephen Handelman
7. *Biological and Chemical Weapons (At Issue)* by David M. Haugen (Editor)
8. *Biological and Chemical Weapons : The Debate over Modern Warfare (Focus on Science and Society)* by Allan B. Cobb
9. *Biological Terrorism, Responding to the Threat: A Personal Safety Manual* by Angelo Salvucci Jr. M.D.
10. *Biological and Toxin Weapons : Research, Development and Use from the Middle Ages to 1945 (Sipri Chemical & Biological Warfare Studies, No. 18.)* by Erhard Geissler (Editor), John Ellis Van Courtland Moon (Editor), jo Moon
11. *Biological Weapons (BCSIA Studies in International Security)* by Joshua Lederberg (Editor), William S. Cohen
12. *Biological Warfare : Modern Offense and Defense* by Raymond A. Zilinskas (Editor)
13. *The Biology of Doom : The History of America's Secret Germ Warfare Project* by Ed Regis
14. *Biotechnology, Weapons and Humanity* by The British Medical Association
15. *Biowarfare in America* by Jim Keith
16. *Britain and Biological Warfare : Expert Advice and Science Policy, 1930-65* by Brian Balmer > *Chem-Bio: Frequently Asked Questions* by Barbara Graves (Editor)
17. *Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response* by National Research Council
18. *Chemical and Biological Warfare: A Comprehensive Survey for the Concerned Citizen* by Eric Croddy, Clarisa Perez-Armendariz, John Hart
19. *Chemical and Biological Weapons in Our Times (Single Title: Social Studies: Current Events)* by Herbert M. Levine
20. *Chemical and Biological Warfare (Reference Shelf, Vol 71, No 3)* by Brian Solomon (Editor)
21. *Chemical and Biological Warfare: The Cruelest Weapons (Issues in Focus)* by Laurence Pringle
22. *Chemical and Biological Weapons: Anthrax and Sarin (High-Tech Military Weapons)* by Gregory Payan
23. *Clouds of Secrecy* by Leonard A. Cole
24. *The Continuing Storm : Iraq, Poisonous Weapons, and Deterrence* by Avigdor Haselkorn
25. *Countering Biological Terrorism in the U.S. (Terrorism: Documents of International and Local Control, Second Series)* by Potomac Institute for Policy Studies Counter Biological Terrorism pane
26. *Emergency Action for Chemical and Biological Warfare Agents* by D. Hank Ellison
27. *The Evolution of Biological Disarmament (Sipri Chemical & Biological Warfare Studies)* by Nicholas Roger Alan Sims
28. *Firepower in the Lab: Automation in the Fight Against Infectious Diseases and Bioterrorism* by Scott P. Layne (Editor), Tony J Beugelsdijk (Editor), C. Kumar (Editor), C. Kumar N. Patel (Editor)
29. *Gassed in the Gulf : The Inside Story of the Pentagon-CIA Cover-Up of Gulf War Syndrome* by Patrick G. Eddington
30. *Genocide and the Global Village* by Kenneth J. Campbell
31. *Germs: Biological Weapons and America's Secret War* by Judith Miller, Stephen Engelberg, William J. Broad
32. *The Greatest Threat: Iraq, Weapons of Mass Destruction and the Growing Crisis in Global Security* by Richard Butler
33. *Handbook of Chemical and Biological Warfare Agents* by D. Hank Ellison
34. *Jane's Nuclear, Biological and Chemical Defense 2001-2002 (Janes Nuclear Biological and Chemical Defence)* by John Eldridge (Editor)
35. *Lethal Mists : An Introduction to the Natural and Military Sciences of Chemical, Biological Warfare and Terrorism* by Eric R. Taylor
36. *Living Terrors: What America Needs to Know to Survive the Coming Bioterrorist Catastrophe* by Michael T., Ph.D., M.P.H. Osterholm, John Schwartz

37. *The New Biological Weapons: Threat, Proliferation, and Control* by Malcolm Dando
38. *The New Terror: Facing the Threat of Biological and Chemical Weapons* by Sidney D. Drell (Editor), Abraham D. Sofaer (Editor), George D. Wilson (Editor), Abraham D. Sofaer
39. *The Perversion of Knowledge: The True Story of Soviet Science* by Vadim, Dr. Birstein, Dr. Vadim Birstein
40. *Plague Wars : A True Story of Biological Warfare* by Tom Mangold, Jeff Goldberg, Goldberg Mangold
41. *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons* by Peter R. Lavoy (Editor), Scott D. Sagan (Editor), James J. Wirtz (Editor)
42. *Rapid Methods for Analysis of Biological Materials in the Environment (NATO Science Partnership Sub-Series: Disarmament Technologies, 1)* by Peter J. Stopa (Editor), Michael A. Bartoszcze (Editor)`
43. *Saddam's Bombmaker: The Terrifying Inside Story of the Iraqi Nuclear and Biological Weapons Agenda* by Khidr Abd Al-Abbas Hamzah, Jeff Stein (Collaborator), Khidhir Hamza
44. *Scientific and Technical Means of Distinguishing Between Natural and Other Outbreaks of Disease : Proceedings of the NATO Advanced Research Workshop* by Malcolm Dando (Editor), Graham S. Pearson (Editor), Bohumir Kriz (Editor)
45. *Scourge : The Once and Future Threat of Smallpox* by Jonathan B. Tucker
46. *Silent Death: The Threat of Chemical and Biological Terrorism* by Kathlyn Gay
47. *Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare*
48. *Undue Risk : Secret State Experiments on Humans* by Jonathan D. Moreno
49. *The United States and Biological Warfare : Secrets from the Early Cold War and Korea* by Stephen Endicott, Edward Hagerman
50. *The Unscom Saga: Chemical and Biological Weapons Non-Proliferation (Global Issues Series)* by Graham S. Pearson
51. *U.S. Chemical and Biological Defense Respirators : An Illustrated History (Schiffer Military/Aviation History)* by Christopher T. Carey
52. *Verification of the Biological and Toxin Weapons Convention (NATO Science Series. Series 1, Disarmament Technologies, Vol. 32.)* by Malcolm R. Dando (Editor), Graham S. Pearson (Editor), Tibor Toth (Editor)
53. *Weapons of Mass Destruction : Response and Investigation* by Steven C. Drielak, Thomas R. Brandon

The following books were added to this list prior to 2000.

1. *America the Vulnerable : The Threat of Chemical and Biological Warfare* by Joseph D. Douglass, Neil C. Livingstone.
2. *And the Waters Turned to Blood : The Ultimate Biological Threat* by Rodney Barker.
3. *The Andromeda Strain* by Michael Crichton. (fiction)
4. *Biological and Toxin Weapons Today* by Erhard Geissler (Editor).
5. *Biological Warfare in the 21st Century : Biotechnology and the Proliferation of Biological Weapons* by Malcolm Dando.
6. *Biological Weapons : Weapons of the Future? (Center for International and Strategic Studies, Significant Issues, Vol 15, No 1)* by Brad Roberts (Editor).
7. *The Black Death and the Transformation of the West* by David Herlihy, Samuel Kline Cohn.
8. *CBW, the Poor Man's Atomic Bomb (National Security Paper, 1)* by Neil C. Livingstone, Joseph D. Douglass Jr.
9. *Chemical and Biological Weapons : A Study of Proliferation* by Edward M. Spiers.
10. *Clouds of Secrecy : The Army's Germ-Warfare Tests over Populated Areas* by Leonard A. Cole.
11. *The Coming Plague : Newly Emerging Diseases in a World Out of Balance* by Laurie Garrett.
12. *Communicable Disease : Epidemiology and Control* by Norman Noah (Editor), Mary O'Mahony (Editor).
13. *Control of biological, chemical, and other non-nuclear weapons : a select bibliography* by Tim J. Watts.
14. *Control of Chemical and Biological Weapons* by A. Alexander.
15. *Control of Communicable Diseases Manual 1995 (16th Ed)* by Abram S. Benenson (Editor).
16. *Controlling chemical and biological weapons proliferation* by Richard Latter.
17. *Control of Dual-Threat Agents : The Vaccines for Peace Programme (Sipri Chemical & Biological Warfare Studies, No 15)* by Erhard Geissler, John P. Woodall (Editor).
18. *Countering the chemical and biological weapons threat in the post-Soviet world : report of the Special Inquiry into the Chemical and Biological Threat of the Committee on Armed Services, House of Representatives, One Hundred Second Congress, second session*
19. *The Cult at the End of the World : The Terrifying Story of the Aum Doomsday Cult, from the Subways of Tokyo to the Nuclear Arsenals of Russia* by David E. Kaplan, Andrew Marshall.
20. *Deadly Feasts : Tracking the Secrets of a Terrifying New Plague* by Richard Rhodes.
21. *A Dictionary of Infections & Infectious Diseases* by O. Potparic, J. Gibson.
22. *The Diplomacy of Biological Disarmament : Vicissitudes of a Treaty in Force 1975-85* by Nicholas A. Sims.
23. *Doomsday Weapons in the Hands of Many : The Arms Control Challenge of the '90s* by Kathleen C. Bailey.

24. *The Eleventh Plague : The Politics of Biological and Chemical Warfare* by Leonard A. Cole.
25. *Emerging Infections (Biomedical Research Reports)* by Richard M. Krause (Editor).
26. *Emerging Infections : Microbial Threats to Human Health in the United States* by Joshua Lederberg, Robert E. Shope, Stanley C. Oaks (Editor)
27. *Epidemics and History : Disease, Power and Imperialism* by Sheldon Watts.
28. *The Eradication of Infectious Diseases : Report of the Dahlem Workshop on the Eradication of Infectious Diseases, Berlin, March 16-22, 1997* by Dahlem Workshop on the Eradication of Infectious Diseases.
29. *Factories of Death : Japanese Biological Warfare 1932-45 and the American Cover-Up* by Sheldon H. Harris.
30. *The Future of Biological Weapons (The Washington Papers, Vol 151)* by Barend Ter Haar.
31. *Gene Wars : Military Control over the New Genetic Technologies* by Charles Piller, Keith R. Yamamoto.
32. *Guide to Germ Warfare (Technical Manual; No 3-216)*
33. *A Higher Form of Killing : The Secret Story of Chemical and Biological Warfare* by Jeremy Paxman, Robert Harris.
34. *Infectious Disease in Emergency Medicine* by Judith C., Md. Brillman (Editor), Ronald W., Md. Quenzer (Editor).
35. *Jane's Chem-Bio Handbook* by Frederick R. Sidell, William C. Patrick, Thomas R. Dashiell.
36. *Killer Germs : Microbes and Diseases That Threaten Humanity* by Barry E. Zimmerman, David J. Zimmerman.
37. *The Killing Winds : The Menace of Biological Warfare* by Jeanne McDermott.
38. *Legal Limits on the Use of Chemical and Biological Weapons* by Ann Thomas.
39. *Man and Microbes : Disease and Plagues in History and Modern Times* by Arno Karlen.
40. *Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases* by Gerald L. Mandell, John E. Bennett, Raphael Dolin (Editor).
41. *The Microbiologist and Biological Defense Research : Ethics, Politics, and International Security (Annals of the New York Academy of Sciences ; V)* by Raymond A. Zilinskas.
42. *Military Chemical and Biological Agents : Chemical and Toxicological Properties* by James A.F. Compton.
43. *Nonproliferation regimes : policies to control the spread of nuclear, chemical, and biological weapons and missiles : report*
44. *NBC : Nuclear, Biological and Chemical Warfare on the Modern Battlefield (Brassey's Modern Military Equipment)* by John Norris, Will Fowler.
45. *No Fire, No Thunder : The Threat of Chemical and Biological Weapons* by Sean Murphy.
46. *Non-Conventional-Weapons Proliferation in the Middle East : Tackling the Spread of Nuclear, Chemical, and Biological Capabilities* by Efraim Karsh, Martin S. Navias, Philip Sabin (Editor).
47. *Nonproliferation Primer : Preventing the Spread of Nuclear, Chemical, and Biological Weapons* by Randall Forsberg (Editor).
48. *Plagues and Peoples* by William H. McNeill.
49. *A Practical Approach to Infectious Diseases* by Richard E., MD Reese (Editor).
50. *Poisoning Arms Control : The Soviet Union and Chemical/Biological Weapons (Special Report / Institute for Foreign Policy Analysis)* by Mark C. Storella.
51. *The Poor Man's Atomic Bomb? : Biological Weapons in the Middle East (Policy Papers, Number 23)* by W. Seth Carus.
52. *Preventing a Biological Arms Race* by Susan Wright.
53. *Proliferation threats of the 1990's : hearing before the Committee on Governmental Affairs, United States Senate, One Hundred Third Congress, first session, February 24, 1993*
54. *Rats, Lice, and History* by Hans Zinsser.
55. *Secret Agenda : One Man's Fight Against High-Tech Terrorists & Their Biological/Nuclear Weapons of Death* by Howard H. Schack.
56. *The Silent Weapons* by Robin Clarke.
57. *The Stand : Complete and Uncut* by Stephen King. (fiction)
58. *Strengthening the Biological Weapons Convention by Confidence-Building Measures (Sipri Chemical and Biological Warfare Studies, No 10)* by Erhard Geissler (Editor).
59. *Terrorists and the Potential Use of Biological Weapons : A Discussion of Possibilities, December 1989/R-3771-Afmic* by Jeffrey D. Simon.
60. *Toxicologic Assessment of the Army's Zinc Cadmium Sulfide Dispersion Tests* by Nas (Editor).
61. *Verifying Nonproliferation Treaties : Obligation, Process, and Sovereignty* by J. Christian Kessler.
62. *Views on Possible Verification Measures for the Biological Weapons Convention (Sipri Chemical and Biological Warfare Studies, No 12)* by S.J. Lundin (Editor).
63. *Virus Ground Zero : Stalking the Killer Viruses With the Centers for Disease Control* by Edward Regis.
64. *Virus Hunter : Thirty Years of Battling Hot Viruses Around the World* by C. J. Peters, Mark Olshaker.
65. *Virus X : Tracking the New Killer Plagues Out of the Present and into the Future* by Frank Ryan.
66. *Viruses, Plagues, and History* by Michael B. A. Oldstone.

67. *Weapons of Mass Destruction Terrorism* by James K. Campbell.
68. *The White Plague* by Frank Herbert. (fiction)
69. *Yellow Fever, Black Goddess : The Coevolution of People and Plagues* by Christopher Wills.

CD

1. *Higher Form of Killing* by Intruder Cdrest 72416.
2. *Snorting Anthrax [IMPORT]* by Alice Cooper.
3. *Spreading The Disease* by Anthrax.

CDROM

1. *21st Century Complete Guide to Bioterrorism, Biological and Chemical Weapons, Germs and Germ Warfare, Nuclear and Radiation Terrorism - Military Manuals and Federal Documents with Practical Emergency Plans, Protective Measures, Medical Treatment and Survival Information* by U.S. Government.

Video Tapes

1. *12 Monkeys* (fiction).
2. *12 Monkeys / Widescreen Edition* (fiction).

3. *Andromeda Strain* by Arthur Hill (fiction).
4. *Star Trek: Miri* by Gene Roddenberry. (fiction)

Frequently asked questions about this FAQ:

1. *When and why was this FAQ compiled?*

   This FAQ was compiled as an adjunct to a presentation on biological weapons for the Ann Arbor, Michigan Democratic Party April 23, 1998. A copy of the original press release is at http://www.ocean.ic.net/ftp/doc/disaster/bio/pr.bio.980415.

2. *Why is so much of the information on this page several years old?*

   This page has been much more popular than I really anticipated nor than I wanted it to be. I haven't been that interested in the subject nor have I had much time or inclination to update it on a regular basis.

3. *Why was this page taken down on October 20, 2001? Did the government censor it? Has there been any pressure from the government to censor the page?*

   The demand for the page was overwhelming the ability of my DSL line to serve it. We are getting more hits for this page currently than everything else on the website combined. There has been no pressure from any government to censor or alter the contents.

4. *Can I cite this page as a source for an article, TV documentary, etc.?*

   I'd prefer that you didn't. This page is a reference tool, and is not complete, up to date, or authoritative. Check the references it contains and contact them. I am not available to do interviews on this subject at this time.

5. *Why is this page so slow/unavailable etc?*

   Its a ADSL link... just don't have the bandwidth. If the server is down entirely probably the

service provider (or your service provider) is having issues, the link is hosed due to too high a volume of traffic, the server is down for maintenence, or I have it booted up in windows to work on my current articles or to play Dark Age of Camelot.

6. *How can I help support this page?*

   Buy books etc. listed on the page... we derive a small commission from such sales.

7. *I have a question/comment/suggestion/resource/correction for the page.*

   Email webmaster@ocean.ic.net.

8. *Is the page being updated? Will it stay up?*

   It is being updated in a limited fashion as time permits. It will have to move to another server or else be taken down as the traffic is just too much for the link at the moment.

9. *Where is the old version of this page?*

   http://www.ocean.ic.net/ftp/doc/disaster/bio/biowfaq044.html.

Please mail questions or comments to:

webmaster@ocean.ic.net

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